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AMERICAN GAS LIGHT JOURNAL

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WHOLE No. 3224

NEW YORK, SATURDAY, DECEMBER 20, 1919

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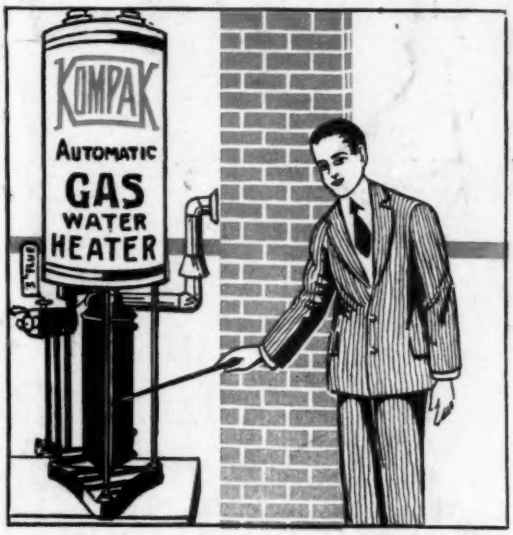


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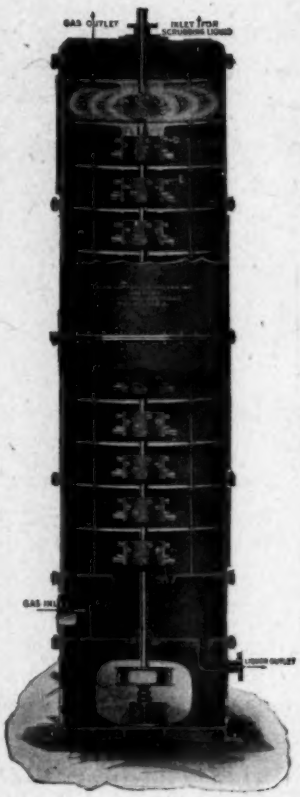
# SCRUBBERS

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FORMERLY THE AMERICAN GAS LIGHT JOURNAL

Vol. CXI, No. 25 NEW YORK, DECEMBER 20, 1919 Whole No. 3224

# Putting the Furnace on the Street Helps Company to Sell Seventy-Five Per Cent of Its Coke on the Minute

## On Cold Days Heat Radiations from Hot Air Pipes Clearly Visible and Provide a Convincing Argument as to the Value of Coke as a Domestic Fuel

By HERBET H. STINSON

One of the biggest problems every gas superintendent has had to contend with has been the problem of keeping the demand for his by-product coke equal to the supply. Often enough the by-product fuel has had to be disposed of at a disadvantageous price, simply for the lack of storage room. Given time enough anyone can sell coke at market prices, but where there is a steady stream of it piling in and only a part of that stream flowing out to the consumer, merchandising it is quite another matter.

The M. W. Warren Coke Company of St. Louis has attacked the problem in a way that has gotten big results and has created such a demand for their coke that 75 per cent of their by-product coke is sold immediately and a big reserve is kept from piling up. Their method of solution is constant advertising, through newspapers and billboard mediums, but their main attraction has been a hot-air furnace, mounted on a stone truck and with a coke fire burning inside. The truck is seen constantly in the streets of St. Louis and has created much interest.

Three years ago the company started with a small

HOW THE M. W. WARREN COKE COMPANY'S COKE BURNING HOT AIR FURNACE LOOKS TRAVELING AROUND ST. LOUIS STREETS

display on the first floor of the Laclede Gas Light Building in St. Louis. At that time coke was not in popular demand by the public, due to the fact that an educational campaign to show the advantages of coke for domestic use had never been carried on in the proper way.

### Usual Forms of Advertising Bring Results, Yet Leave Something Wanting

There was quite a bit of newspaper advertising done at first, and this coupled with billboard advertising had a noticeable effect on the demand. But the results of this publicity were not sufficient to satisfy the company and ways and means were sought of getting so directly before the domestic consumer that he would be forced to see the advantages of burning coke in his heating plant.

The answer consisted in carrying a real fire in a real furnace to the "man on the street," and putting the proposition of coke before him in such a way that he could not dodge it. The idea was the child of two distinct but closely related branches of the merchandising plan. What was the most valued thing in advertising? A unique method of getting the public's attention. And what was the most valued thing in salesmanship? Personal solicitation.

This then was the line of thought that prompted the company to put this display on the street. Nothing could be more original in the way of advertising than bringing the mountain to Mohammed, inasmuch as for ages Mohammed had been going to the mountain and still steadfastly refused to make the journey, and from that came the idea of putting the furnace in actual operation on the busiest streets of the city.

### Hot-Air Radiations Visible to Eye

The display consists of a hot-air furnace mounted on a horse-drawn stone truck, a stone truck being selected because its construction permits the furnace to be carried almost at the level of the sidewalk, thus giving the spectator a clear view of everything connected with the display, a thing vital to the creation of interest. A clean, hot fire is kept burning in the furnace at all times, particular care being taken to see that the beautiful, blue carbon monoxide flame, characteristic of a well-tended coke fire is in evidence. From the top of the furnace lead short sections of hot-air pipes and on cold days the heat radiations are clearly visible, additional testimony to the fact that a coke fire is a heating fire.

Placed around the furnace are a number of bins, containing the various sizes and grades of coke, manufactured by the Warren Company, surmounted by signs giving the different uses of the different kinds of coke. Over the whole display is a large sign giving the name of the company, the location of their offices and plant and the trade name of their product.

After that there came the problem of so explaining the use of coke in house heating that the "man on the street" could see and understand for himself just why he should be burning coke instead of coal. Obviously it was impossible for the company's salesmen to solicit every consumer in St. Louis by going to his office or home and yet personal solicitation was the very method the company wanted to use.

### Keeping With Customer Until All Troubles Are Ironed Out

This was settled by placing on the display one of the company's most experienced demonstrators, whose duty it is to stop the truck at every corner, give a short but interesting talk on the uses and advantages of coke, point out the fact that there was little or no soot, and particularly call attention to the hot, clean fire burning all the time the talk was going on. After the talk an interesting series of pamphlets is distributed to the crowd that invariably gathers about the display, and the salesman on the truck takes down the names and addresses of those who seem more than casually interested.

Another feature the company has adopted is keeping with a customer until all his troubles are ironed out and he is completely satisfied with his choice of coke over coal. After a purchaser has had sufficient time to try the coke and test it out thoroughly, he is the recipient of an inquiry as to whether he has had any trouble with it. If he has, a company demonstrator is sent to his home and the cause of the trouble is investigated. Usually the trouble is due to faulty construction of the heating plant or the improper stoking of the fire. In either case the demonstrator stays with the job until the cause of the dissatisfaction is eradicated. Thus the Warren Company is building up a clientele that promises to take care of their output for some time to come.

### Cheapest and Most Effective Form of Advertising

Officials of the company say that the display has proved itself the most effective and cheapest form of advertising they yet have devised. There is some expense entailed in the upkeep of the truck and furnace, inasmuch as the fire must be kept burning constantly, a large supply of literature given away and one man, a high-priced demonstrator, is kept busy all the time, driving the truck about and explaining the display and making the selling talk at each stop. But the results it has brought are so far ahead of those obtained by any other method of publicity, costing as much or more, and the company is so well satisfied with it that they would continue its use, even though it cost twice as much.

## Why Labor Should Oppose Public Ownership

The Indianapolis *Union*, the oldest labor paper in the United States, on public ownership of utilities says:

"We know—every man of us knows—that there isn't a city hall or court house or other government center in the country that is not managed in such fashion as would bring an institution not backed by the public purse to bankruptcy in short order. What guarantee have we that a Government controlled railroad system, backed by a political machine operated by two million or more votes, would be free from the evils that are common to all Government controlled organizations—except the army and navy, which has no vote? Why the country would be practically at the mercy of such a machine. And labor, as a whole, would pay the freight on a politically framed tariff that might overwhelm us. Organized labor cannot afford to indorse the Plumb Plan."

# War, Though Officially Terminated, Still Holds Europe in Its Grip

## Though the Gas Business, of Course, Suffers with Others, a Bright Lining to the Cloud Is Realization of Potentialities of Utilities Towards Warding Off Danger of Complete Economic Destruction

By L. W. ALWYN-SCHMIDT

The war still holds Europe in its grip. Although it is passed in fact, it remains in the mind of all and the unsettled conditions all over Europe will not permit men to forget it.

The business of the gas industry is bound to suffer under these conditions. We cannot expect it to prosper with discontent, high prices, and labor unrest rampant over large parts of Europe, and with at least half of its population on the brink of starvation.

On the other hand, Europe has realized that if it ever shall be able to clear itself from the danger of complete economic destruction it will be by the aid of its public utilities. These, therefore, have to be kept in operation and everything is done to help the gas works.

The problem is as great in France as in Germany and England, but the English gas industry seems to have realized earliest how and in which direction it may find salvation. The railroad strike no doubt has been an obstacle in the way of progress, but England has dealt with the strike in a most admirable manner.

### Elasticity of Institutions a Factor

It was aided by the great elasticity of all English institutions. The English, although ponderous in the form of their Governmental machine, have a happy-go-lucky way of dealing with the problems of every-day life, that has stood them good service in the present emergency.

When the strike broke out and it became obvious that coal might not be at the disposal of the gas companies in the required quantities they effected a complete liberation of the gas companies from the standards of production laid down by the Government.

This made it possible for the English gas engineers to pull out their coal reserves to such an extent as to make them practically independent from new supplies for any length of time.

The experiment shows that, given some latitude, the gas industry would be very well able to take care of itself in an emergency, and the public, although it did not get always the best gas, at least got the next best of it, which was all that could be expected under the conditions. Whether the gas industry would have been able to carry on for many months is doubtful. Fortunately for the industry and also most likely for the railroad strikers, the question has not been put to the test. The strike ended before any of the gas companies had landed in serious trouble, and operation has now been resumed under practically normal conditions.

### England Ready to Give Gas Engineering Its Great Chance

England is ready to give to gas engineering its great chance during the next few years and the gas engineers are preparing to meet the situation. Through all the recent meetings of sectional and national gas associations in England there has been going a distinct note of hopefulness. The war has not only created many problems of its own, but it has also provided the solution for others and with it has opened a new vista for gas engineering, which is readily followed by all British gas men. One of the most outstanding changes is the steadily increasing demand for gas during the day.

### Industrial Consumption in England

C. E. Wright, of Ipswich, in a paper read before the Eastern Counties Gas Managers' Association, pointed to the reversal of gas consumption that has taken place in his district during the last year. While 49 per cent of all the gas was consumed in 1900 during the day, during the last year 70 per cent was the day consumption and only 30 per cent of the daily production was taken during the night for lighting purposes. "These figures are a sign post on the way," said the speaker. "Other places may not have had the same development in quite the same way, but I believe the tendency will be on the lines indicated. Our commodity is going to be used in increasing quantities in a direction quite different from its original object, lighting. The 'so and so' Gas Light Company will ultimately become a misnomer; it will be the Heat, Power, Coke & Light Company."

This is no doubt a very sound suggestion. As long as we continue to talk of the gas company as a lighting enterprise we classify it as such and the public will take the hint. It will accept our service at its face value and will use gas for lighting purposes only. Change the name and a new situation is created. The gas company appears not as a provider of light only, but as a purveyor of power, of coke and possibly also as the manufacturer of a number of very important by-products. The gas consumer will view the gas industry from a new angle and as he has taken our lead in the past so he will accept it in future. No doubt the change of name also will be of material influence upon the gas men themselves. There are still a great many gas men who by a peculiar mental process cannot see in the gas industry anything but a manufacturer of gas for lighting purposes. Their whole policy centers

around this one field of production and distribution, and they reject steadfastly everything that might lead into the more productive fields of industrial consumption and ordinary manufacturing.

### Electrolysis in Europe

The attention of European gas engineers has been drawn of late to the increasing corrosion of pipe lines caused by the electrical ground discharges of the electrical railroads. This question was studied intimately by a special commission of water and gas engineers in Switzerland which has consulted with similar interests in other countries, and a report has been made. It seems that only in large cities any severe disturbance of the pipe line system caused by these discharges has been proved. The commission was very much hampered in its work by the fact that corrosion is not caused by electrical influences only, but may be produced by many other agents. How important a proper solution of this problem will be for the gas industry may be gathered from the fact that actual perforation of the pipes has been traced as following corrosion caused by electricity. The report also points out that less damage has been done by the newer electric railroads.

### Conditions in Germany

The last month has slowly lifted the curtain that has hidden, until now, conditions in Germany, and we are able to gain a more perfect impression of the effects of the war upon the German gas industry. Of the different branches of the European gas industry the German, no doubt, was most heavily affected by the rise in operation cost. As a result the cost of production of the German gas industry is hopelessly out of relationship to the existing gas tariffs of which most were made before the war.

The German Government has taken steps to bring relief to these gas plants by giving them permission to raise their rates to a basis more in conformity with existing conditions. The situation as affecting the German gas works is well described by Dr. Wilhelm Supf in the *Journal fuer Gasbeleuchtung*, from which the following figures are taken. Coal has increased from 13.25 marks per ton in 1914, to 63.53 marks per ton in 1919, or expressed in dollars at the old exchange, an increase in coal prices took place from $3.31 to $15.90 approximately. The coal not only increased in price, but lost also much in quality. From 1,000 kg. coal for instance the following was won:

| | 1913. | 1917. |
|---|---|---|
| | kg. | kg. |
| Ammonia | 3.00 | 2.38 |
| Tar | 47.66 | 34.10 |
| Coke | 476.00 | 394.00 |

This had a most depressing effect upon the financial results of the by-product industry, and while the net cost of the coal to the gas works had been 4.13 marks per ton in 1913, it was 30.00 marks in 1919. Unfortunately for the gas industry there was no possibility of finding a compensation for the higher cost of coal in a higher price for the by-products. The value of by-products, in fact, rose only very slowly, and had reached only about double its pre-war volume by the end of the war. A very considerable factor in the increasing cost of operating the German gas works was also the increase in freight rates. Where it had cost $1.50 (old exchange) to transport one ton of coal, $2.70 were charged in 1918 and $3.35 in 1919. Conditions are similar as to wages. The following scale is most instructive in this respect:

| | —Cents per Hour— | |
|---|---|---|
| | 1913-14. | 1919. |
| Unskilled and skilled yard hands.. | 12 to 13 | 50 to 56 |
| Pipe layers | 14 to 18 | 56 to 63 |
| Lamp fitters, etc. | 12 to 15 | 50 |
| Machinists | 12 to 15 | 56 |
| Engineers | 15 to 18 | 63 |
| Inside hands | 18 to 20 | 75 |
| Power engineers | 18 to 20 | 75 |

The effect of wages on production cost is very considerable, and while 0.5 cent, approximately, was sufficient to pay labor on one cubic meter of gas, now 1.75 cents are required. In one case the plant pays to-day for coal and wages alone more than double the total cost of pre-war operation. Two hundredweight of machine oil costing $11.25 approximately before the war costs now $62.50. Cast iron pipes rose from $25 per ton to $187.50 per ton.

The by-product industry of the German gas industry is suffering somewhat by the general disorganization of the German chemical industry.

The present situation shows, however, the value of using the gas industry for the purpose of making many of the basic materials of the chemical industry instead of plants constructed especially for the purpose. These specially constructed plants labor to-day under great difficulties. They suffer from lack of labor and raw materials and are producing consequently at too high a cost for present conditions in Germany.

The gas plants, on the other hand, are able to duplicate the work of these special plants more easily and, finding financial compensation by the sale of gas, more cheaply.

Also the gas industry is not suffering to such an extent from labor troubles, as it is the case with most other industries.

If the gas works, nevertheless, are seriously hampered in the operation of their by-products plants, the cause lies with those industries which are in the habit of buying the by-products of the gas works.

These industries, especially the aniline and coal tar dye works have had a more than unusually large share of bad luck. Labor troubles have been frequent and stoppages numerous. The situation is now picking up again, but in the meantime it has become necessary for many gas works to curtail the output of their by-product plants.

### Providing New Sources of Income

German gas works, by the way, have been very ingenious during the last years in providing new sources of income for their sorely tried enterprises. So several attempts have been made to connect the gas works with a public bath. This is a sort of by-product that might also appeal to our gas works and, therefore, may be described more fully. In one case the bathhouse was built on a property adjoining the gas works proper. The entrance to the building is from a side street. The

building contains not only a swimming pool but also a number of individual tubs. All this is placed in the lower parts of the building while the second story is given over to the administration offices of the gas company which are reached from the yard of the gas plant. The water of the pool and the general water supply is heated with the surplus heat from the gas works. In some cases the steam boiler installation of the gas plant supplies the water. The administration and operation of the bathhouse is done by the staff of the gas works. The financial results of these kinds of enterprises appear to have been very good. The operation of the bathhouse does not interfere with the operation of any of the ordinary by-product plants now worked in connection with gas manufacture, and it means a distinct addition to the activities of the gas work.

### Gas Lighting Grows as Result of War

The war could not fail to leave behind many revolutionary changes. In Germany one of these seems to have been a further extension of gas lighting with a resulting reduction in the use of petroleum. The position of the German petroleum market was precarious already for several years before the war. The German Government had contemplated to introduce a petroleum monopoly, and there had been increasing difficulties of meeting the requirements of the population. During the war a petroleum famine arose and made necessary the transition to other forms of lighting. Germany has no pertroleum resources of her own, but it possesses large reserves of coal and will continue to do so. It was, therefore, not difficult to replace oil lighting by gas wherever necessary, and the change seems to be for permanent. An interesting proof for the extent of this movement is given by the increase of the number of gas meters that were in use in Germany during the war. According to a report of the "Imperial Commission for Coal Distribution," Germany had 5,205,000 gas meters on March 31, 1914. One year later, after eight months of war, the number had grown already to 5,626,000. It was 6,038,000 on March 31, 1916, and 6,375,000 on March 31, 1917. On March 31, 1918, the last date of the report, it had finally reached 6,539,000. But these figures cover only part of the increase. During the war many gas companies discontinued the use of meters altogether, replacing them by bulk contracts for lighting. It is estimated that in this manner another 1,000,000 consumers have been added to those already existing, bringing the total increase of individual consumers during the time of the war to 2,000,000 approximately. It is estimated that at least 29,000,000 persons are supplied with gas in Germany to-day.

Necessity has forced the German gas industry to an experiment in gas conservation that has not only resulted in reducing considerably the wasteful use of gas in the individual households, but will now help also much to increase the use of gas in such German households where it has not been employed in the past.

It appears that the quality of the gas produced by the German gas companies had to be very much reduced during the war. The German gas companies manufacture in normal times a standard gas which is the same approximately all over Germany and permits a very extensive standardization of the whole equipment of the industry, including the lighting fixtures, kitchen ranges, etc. During the war, when gas varied very much in quality, it became necessary to readjust the house equipment repeatedly to the conditions and the gas companies had much trouble to satisfy their consumers. Special women workers were trained to do this work. They went from house to house and helped the housewives to arrange their burners. This system was found costly and it led in turn also to much irritation among the consumers. It was, therefore, decided to use other means and to influence the consumers by way of their children. A training school was started for the purpose of giving to teachers a practical training in the use of gas as a fuel for the house and these schools were visited by a number of household experts. The teachers trained in this manner were then handed over to the schools, where they transferred their knowledge to the children. Germany has a well regulated household training system which goes together with the elementary schools, and most schools have a complete training kitchen attached to the building. These kitchens were properly equipped with gas ranges and individual gas cookers, and specially trained lecturers were sent around the schools. They explained to the teachers and the children how the gas ranges had to be handled, in order to use least gas and how they might be adjusted to the varying strength of pressure. Also lectures were given on the handling of lighting fixtures, etc. For this purpose a special apparatus was constructed which was taken from school to school by the lecturers. A manual on the handling of gas in house and kitchen also was issued and distributed freely. The results of this policy were excellent. It is now contemplated to extend the courses and make them the foundation for an effective campaign among school children for the introduction of gas in the home. It is argued with correctness that the children if they once have learned to use gas will not return easily to the older forms of kitchen heating when they take up housekeeping of their own, and that in this way they will not only lighten their own work but will also help to introduce the use of gas in the households of Germany. The argument certainly seems to be a good one and the idea deserves to be copied in our own country.

A rather peculiar situation seems to have been created in many European cities where gas is used for street lighting owing to the heavy damage that is done to the gas mantles by heavy traffic. Motor trucks were practically unknown before the war in Continental Europe. They are now more and more the rule, and where they pass through the street they leave behind a story of destruction. The head of a local street lighting department, for instance, reports that no less than forty mantles have had to be replaced daily in a certain street in his district, costing not only a heavy outlay in cash, but bringing about also a very unsatisfactory condition in the lighting of that particular street. A lamp with a broken mantle is of no use as a light distributor. As the heavy traffic most likely will increase it is obvious that something will have to be done to remedy the situation, and several propositions have been made by gas engineers to end the trouble. The solution most likely will lie in a strengthening of the mantles.

# Is One Heat Unit Worth as Much to the Consumer as Another?

**Pacific Coast People Greatly Interested in the Answer — E. C. Jones Offers Some Interesting Findings**

Where should the heat unit standard be set? The California regulatory Commission put it at 570.

Leon Jones brought up the matter at the annual meeting of the Pacific Coast Gas Association. He does not believe that the commission feels it has laid down the last word in the matter; that it believes 570 B.t.u. gas is necessarily the best gas for the consumer.

H. G. L. Strange, formerly of the Honolulu Gas Company, recently a major in the British army, followed the discussions on the subject at close range in England. Under the spur of necessity over there they had to get along on a 400 B.t.u. gas and found to their amazement that it returned a very satisfactory service.

### A British Thermal Unit Better at 400 Than at 600

A committee of the Institution of Gas Engineers was ready even, unofficially, to state that a British thermal unit at 400 is better than one at 600.

E. C. Jones preferred to view the matter as a consumer. "I am going to disregard any saving of oil," he declared, "or any advantages to the gas company as purely selfish, and treat the subject as it affects the consumer of gas. I believe that you will agree with me that that is fair.

### Originally Set a High Standard

"In 1911 I got to a point in the gas business where I felt that the nuisance of candle-power must be abolished and to help a good cause, I prepared a paper for this association on unstable hydrocarbons in illuminating gas. In that paper I explained why candle-power was a nuisance, and prevented the delivery of good service to the consumer, and was expensive to the company. At that time it seemed revolutionary for me to recommend a British thermal unit standard of 500 B.t.u. per cu. ft., but that was part of the paper. At that time we knew very little about calorimetry. We looked upon the country and saw that the various companies were delivering a gas of 600 B.t.u. per cu. ft. It meant in most cases that they did not have a calorimeter. Nobody knows why they fixed that standard, any more than anybody knows why there are twelve inches in a foot. Following the paper of 1911, I took up the matter of experimenting on British thermal units to find out if one thermal unit had an equal value with another thermal unit. In 1915, in my president's address, as president of the Pacific Coast Gas Association, I still further recommended the abolishing of candle-power and the fixing of a heating value standard to be not less than 600 B.t.u. per cu. ft.

"That may be recalled as a club against me, when I now recommend a lower heating value standard, and I say this in defense of it, I don't believe there are dishonest men in the gas industry. I hope not.

"But I felt at that time that if the bars were let down of candle-power and heating value at the same time, that it might work a hardship on the consumer.

"There might be some gas company in the United States which would avail itself of a low heat value, which was lower than the best heat value for a consumer.

"Therefore, it was to protect the integrity of the gas industry that I recommended abolishing candle-power and adopting the heating value of 600 B.t.u. to the cu. ft.

"Since that time wonderful experiments have been tried by Leon B. Jones, and he deserves a great deal of credit for it in determining the efficiency of gas of lower heating value than 600 B.t.u. The best gas as we could determine it, was gas that had been absolutely stripped of its hydrocarbons, which required so much air for combustion.

"And, after having stripped the gas of its hydrocarbons, to then put it through a compressor at about 150 lb. to the square inch, and still further squeeze out every unstable element in the gas and dehydrate it and deliver it to the consumer, and we get better efficiency in heating water and in everything else for which gas is used, with gas of 525 B.t.u., after it had been stripped and compressed, than we could possibly get with a gas at 600 B.t.u., as turned out in the gas works.

"It seems to me to-day, that we might take this stand: Here are two coins, one containing one hundred cents and one containing fifty cents, and I am asking you to believe that the one containing fifty cents is of more value to the consumer than the one containing one hundred cents.

"That is hard to explain. The matter has got to be approached in a dispassionate way, but I think you will all agree with me that the application of skill in purchasing will produce better results with the smaller coin than can be obtained with the larger one if wastefully used.

"If investigators want to get a low heating value, they vitiate the gas with either air, carbon dioxide or something else. If they want to raise the heating value they carburet the gas.

"That is no way to make gas for your consumer, because gas for the consumer must be uniform and stable.

"Uniformity of quality within ten or twenty British thermal units year in and year out, is the best service for the consumer.

"Now, let us approach this subject in a technical way. I don't know much about it, but I am going to know something about it if I live another year.

"Let us take, for instance, the gases that compose the mixture that we sell to the consumer. Take hydrogen and carbon monoxide.

"Each of those gases when burned through a Bunsen burner, requires 2.4 volumes of air for combustion and if hydrogen or carbon monoxide require that—let us take natural gas and consider it as carbureted hydrogen or marsh gas.

"It requires 9.6 volumes of air for combustion to every volume of gas burned.

"Do you realize how much more nitrogen you have to heat and how much heat is lost by the nitrogen?

"Let us go to some of the higher hydrocarbons like the benzines that require 36 volumes of air for the combustion of one volume of gas, and think for a moment how are you going to adjust air shutters and appliances to take care of this additional amount of air.

"It cannot be done automatically.

"You must make first a gas that is uniform and of the best heating value for the consumer, and then you must construct an appliance to burn that gas.

"During the war this matter was stumbled over—first by a system of premixing before combustion, mixing a certain amount of air with the gas before it is burned. It never went beyond three volumes of air to one volume of gas.

"Oil gas requires four to five volumes of air for combustion, and natural gas in southern California requires about ten volumes of air, and it remained for another man to mix enough air with gas for complete combustion, so that the gas would burn under water, and so that the gas does not need secondary air, and that system is now used in different parts of California, performing its functions in industrial work. I am not boosting any process of mixing air with gas. This matter is too big from a technical standpoint, but as soon as I saw the Kemp system in operation I said to myself: 'Here is an improvement in the use of gas which may teach us that the theoretical value of these gases, hydrogen, carbon monoxide, etc., are not correct in practice if we can use a mixture of gas and air without the necessity of secondary air, in the Junkers calorimeter, we may find that what we considered a 570 B.t.u. gas is a gas of different heating value.'

"Now, to show you without disparagement of anybody's gas or hurting anybody's feelings, I took the pains to make some experiments with this mixture of gas and air, mixed to an explosive point, and when I say 'explosive' I don't mean a gas that will explode with air, but when it ignites, has the greatest explosive force, and the combustion is complete.

"The American Canning Company very courteously permitted some experiments Monday night.

"First, I wanted to find out something about the efficiency of 550 B.t.u. gas as made in the City of Oakland, and the thermal efficiency of the natural gas of 1,153 B.t.u. per cu. ft., such as delivered in Los Angeles.

"I supposed that the soldering of cans of various kinds would be the best way to judge how much gas a thousand cans would take to solder, and how much it cost.

"But when we got through with our work, we found that some of the cans were sardine cans, some were tamale cans and some 5-gal. coal oil cans, and they could not be averaged.

"My assistants who stood back of me, said: 'Why don't you take the number of lineal feet of soldered seam, and then it doesn't make any difference what kind of a can is soldered, so we can arrive at a way of averaging it'?

### More of High British Thermal Unit Gas to Do Work Than of Lower

"We took the gas in Oakland and soldered 93 million lineal feet of cans with gas of 550 B.t.u. to the cu. ft. of manufactured gas, and it required 24.8 cu. ft. of gas to solder 1,000 lineal feet of seam. We came to Los Angeles and took the same apparatus constructed on the same design, and we soldered 9,000,000 ft. of seam last Monday night with a gas containing 1,155 B.t.u. to the cu. ft., and it took 38.3 cu. ft. of natural gas for a 1,000 ft. of seam—38.3 ft. of natural gas at 1,153 B.t.u. against 24.8 cu. ft. of 550 B.t.u. of manufactured gas, to the 1,000 ft. of lineal seam.

"Now, then, because the gas in Oakland is 74 cents per 1,000 ft., and the cost of natural gas plus service in Los Angeles is 41 cents per 1,000 ft., I think it is perfectly fair to reduce the cost of gas to the American Can Company in Oakland to 41 cents. As a means of comparison, suppose the Oakland 550 gas was 41 cents, and we know that the gas in Los Angeles of 1,153 B.t.u. was 41 cents, we find that with the 550 gas in Oakland,, it cost .01017 cents per 1,000 lineal feet of seam, and in Los Angeles at 41 cents per 1,000 ft. of natural gas at 1,153 B.t.u. per ft., it cost .0157.

"It is a matter of simple arithmetic to see the advantage of the 550 gas for doing the work.

"I am not prepared to say that 550 B.t.u. is not too much. If you were to ask me what I considered the best heating value for the consumer—and he is the only one I care about to-day, as I am speaking—the rest will come later on and it will be the result of this work to give service to the consumer—I would say somewhere between 500 and 525.

"I may be compelled to come before you in the next four or five years and apoligize for placing it so high."

### Regulatory Commission Has Its Say

A representative of the California regulatory commission took issue with Mr. Jones.

"I am pleased to have heard Mr. Jones state what he did in regard to the fixing of 570 B.t.u. as the standard for gas," he declared, "You gentlemen may be surprised to know that during the past year the quality of gas in California has varied between wide limits, so that at one plant we tested we found 450 B.t.u. per cu. ft. The company claimed it was making 600. Another plant claimed 550 but was making about 500.

"The commission has fixed 570 B.t.u. as the standard. We do not say that it is without question of doubt the quality most efficient for the consumer, but is close enough to be continued until some other quality is proved more efficient. The commission expects the companies to live up to the standard as fixed and I am certain you will all agree that it was very advisable to have some standard to work to.

"I was very much surprised in several tests to find the quality of gas as low as it is. It may be that the suggestions just made about 400 and 450 B.t.u. gas are correct, but until they are proven every company must make 570 B.t.u. gas unless authorized to do otherwise. Where a company makes a certain quality of gas, or claims to have made it, the commission will expect it to continue making the same and not reduce the quality, which latter act would increase the charge without any question.

"I was very much interested in making some tests the other day. We made some 670 B.t.u. gas by passing gas of 530 B.t.u. over crude benzol and gasoline. After a long series of tests with different rates of flow through the burner we found the efficiency to be about 48 per cent. We took 535 B.t.u. gas and obtained the same efficiency. There may be some conditions not clearly covered by that test but it proves that we do not know enough to change the heat content at the present time, at least downward.

"Mr. Jones stated just now that the efficiency of a certain class of apparatus here in Los Angeles apparently was about half of what it was up north—that is, it took more of a 1,000 B.t.u. gas to do a certain work

than it did with 550 B.t.u. gas. That is astonishing to me. Where artificial gas was formerly served, the natural gas when introduced reduced the bills about 40 per cent. There was a marked example in Ventura County, where a quality of gas of about 500 or 550 B.t.u. was being served. The introduction of natural gas at 1,200 or 1,300 B.t.u. reduced the bills over 50 per cent with the same rates. I think there is something there which needs explanation.

"Referring again to the standard of 570 B.t.u., I think it is very clearly set forth in the General Order that the quality of 570 shall be followed. In a few instances variation is granted where rates are fixed on a specific quality of gas. I hope we will not find any more 450 B.t.u. gas."

Leon B. Jones added further to the discussion:

"I do not rise with any anticipation of coming up to what E. C. Jones has said about knowing anything about heat units," he explained. "The tests which he referred to were conducted some two years ago, and will very largely answer Mr. Ready's refutations of previous statements regarding natural gas reducing the bills when it has replaced artificial gas.

"These tests were conducted in connection with a case before the Railroad Commission of California in which the 550 B.t.u. standard was stipulated.

"I believe that we satisfactorily demonstrated that 550 B.t.u. was the most satisfactory standard for the consumer.

"Gas was being supplied from the large city in question by high pressure transmission, some 26 or 28 miles distant, and, as you know, the compression of gas to high pressure for transmission condenses some of the unstable hydrocarbons, the benzines and that group of unstables which we have been placed to call illuminants from the gas.

"At the end of this transmission line, gas was sold to a small company for local distribution. The company which was retailing the gas, in this small community, claimed it was their right to have the same standard fixed for its gas as was fixed for the gas that was supplied to the large city.

"This, of course, would work an unnecessary hardship because all of the gas of the large city would have to be made with a sufficiently higher British thermal unit content to allow for the compression losses of the very small quantity for high pressure transmission, and it was to refute this argument that these tests were made.

"We made thousands of what I might term theoretical tests, and in saying that I will enlarge to a certain extent. They were theoretical in a way, because they were made in the laboratory.

"But every means was taken to make them practical in that the gas was utilized to perform useful work.

"It was used for heating water on the top burner of a standard range which we considered represented the greatest amount of equipment on the lines at that time.

"A great many tests were made to determine the relative efficiency of the gas before and after compression and in these tests when I refer to efficiency, it will be taken to mean the percentage of heat that was converted into actual useful work, divided by the heat which was theoretically contained in the gas consumed to do that work.

"The efficiency of the gas was demonstrated in a great many tests with the gas before compression, and the same tests were repeated and duplicated with the gas after compression.

"In every case, the uncompressed gas was as nearly uniform as the personal equation of the gas works would permit.

"These tests demonstrated that when the gas after compression was consumed to perform useful work, at the same rate of British thermal unit consumption as with the gas before compression, which was 10 or 12 per cent higher in theoretical heating value, in many cases it performed the same useful work with less actual volume.

"A cubic foot of gas after compression in many of our tests did the same or more useful work than the same cubic foot before it had the benzines removed by compression.

"This seemed to demonstrate that benzine or illuminants of the artificial gas had a false or overrated heating value. They did not come up to their theoretical standard when mixed with the other ingredients that go to make up an artificial gas.

"These tests might be considered theoretical, or that theoretical tests made in the laboratory could not be taken as a criterion of what would be the result if the same conditions were applied by the consumer in actual practice.

"But the tests did not stop with these theoretical tests. We have tests which are of actual utility, or practical tests.

"E. C. Jones asked the question a few minutes ago why 600 was the standard. I believe he has answered the question before on this floor. That 600 was simply an hereditary standard that came down through the ages of the gas industry as the value found in the early coal gas from less temperatures. The candle-power standard prevented any discussion of relative values of heat units until a few years ago. In San Francisco we formerly had a candle-power standard—19 candles and 600 B.t.u. But then the standard of 600 thermal units meant nothing. A gas of 19 candle-power necessitated a gas of 660 or 670 B.t.u. The candle-power standard was proven to be of no value and the heating value standard came into effect.

### Gradual and Constant Production

"In going back over the records of gas supplied in San Francisco for the last ten years, we find there has been a gradual and constant reduction from 680, the British thermal standard which was necessary to supply the 19 candle-power standard, to the 550 B.t.u. standard which is the standard to-day. Many of the manufactories, and a great many of the consumers in San Francisco who are using gas for the purpose of roasting coffee or other work of that nature, have kept careful records, and these records show the actual consumption of gas from year to year.

"With such data as that available, it has shown that to roast a pound of coffee or do a unit of useful work, which is the consumer's ultimate purpose, has required no greater amount of 500 B.t.u. gas such as is being served to-day, than it did, in many cases with the same appliances, four or five years ago, with 580 B.t.u. per cu. ft. I find myself very much in the position of the committee which Major Strange referred to.

"I do not propose to attempt to answer 'why' nor to

(*Continued on page* 583.)

# American Gas Engineering Journal

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## As the Journal Views It

### Christmas Cheer in the Gas Industry

As another Yuletide season rolls around, the old-fashioned Christmas cheer creeps somewhat as of old into the gas industry. Is it only because the whole atmosphere this year is brimful of "Peace and Good-will"? So, while everywhere the air is crisp with cheer, we pause for a moment to think of a reason to gather some of it to the gas field, and we find that a good part of it belongs here; for from out the acid test of the most trying times that have ever beset the field the gas industry has come into its own high place of importance. Even the thought of those trying times brings cheer now, because lessons have been learned which nothing but those experiences could have taught.

There's cheer at every turn; cheer when we reflect how amply the nation, in its great network of industry, has recognized the significance of gas, and yet more cheer with the thought that in the multitude of opportunities untouched the nation's industries still hold far greater rewards for the gas field.

Of such material was wrought the fabric of the addresses made at the national convention held in New York in October.

And once again there is cheer; after four years of war-checked development, diverting money to carrying on destructive warfare that in normal years was spent in providing for increased demand and increased population, there is money available now for construction and expansion of plants, enabling the extension of operations of gas companies, both big and little.

The American Gas Engineering Journal wishes for its readers a full measure of the Christmas cheer

that everyone in the field so well deserves for the achievement of work that is proving itself well done because it is increasingly inspiring public confidence, and public confidence is the bulwark behind which the industry must stand. MERRY CHRISTMAS TO YOU ALL.

## A Difficulty in the Way of Selling Gas on a Heat Unit Basis

Strong arguments have been advanced for the sale of heat units instead of thousands of feet of gas. One naturally is inclined to favor the project, the apparent benefits seeming so obvious and the detriments not so evident at first glance.

Naturally our thoughts turn to measurement. In England they have suggested getting around the difficulty by registering cubic feet and conversion to average heat content.

This is roundabout, and a burden which after a while will become intolerable to the gas company if not to the consumer.

If we take up selling so many heat units to our consumers we must do so with our eyes open to the fact that sooner or later, perhaps very soon, the consumer's meter will have to register in heat units rather than in thousands of cubic feet.

It is a factor potent enough to warrant serious thought before taking the step.

There are many meters installed. Even a slight change in each would represent in the total a tremendous expense.

The question, in these changing times, is do the gas companies want to place that much money on the meter end. Will it be well placed?

## Who Gets Licked?

Our country and various other nations called forth millions of people from comfortable and decent surroundings to plunge them into an almost unbearable and filthy mode of life, into physical agonies beyond the power of words to describe, to overcome and deterrently punish a people who had run amuck. Thanks to the kind of people the nations called forth the overcoming was with relative promptness performed and the sentence that should have represented a punishment meted out.

The American, the French, the British, the Belgian industry by the peace treaty was set off at a decided competitive advantage over the German. While they should forge ahead the German would be hampered paying off back debts. This, of course, being on the proviso that the American, the Frenchman, the Britisher and the Belgian maintained their level-headedness.

But the tendency seems to be to take a rest.

The American workman evidently reads with too much thoroughness those stories about our accumulating balance abroad.

Of course, he knows that sooner or later he must produce and produce hard to keep pace, but apparently he looks on that margin that is owing us as a buffer to stand him off until, leisurely, he hits his gait.

It would be fine if, after becoming habituated to work, we could stop short, idle completely or at least mark time, then start in again with just as much enthusiasm and with as much stronger energies through being recreated.

But experience has shown that when we do not work, at least partly, from force of habit, we do not work at our best. When we get out of the habit of working it is hard to get into it again. It requires an effort of will to work. Anyone, even those inexperienced at it, can become an idler almost instinctively.

The German, from all reports, has not let up. He has to keep going. Because of the spur upon him, because that to pause would be to perish, because he has no comfortable margin in his favor to fall back upon, he has to put his shoulder to the wheel and push.

When the margins of the conquerors of the battlefields are shaved down, when the reparations are paid in and expended, unless meantime they manifest a greater tendency to get back to the looms again, and get back to them in grim earnest, they are apt to find their competition with the Teuton a pretty much uphill affair and with the advantage on his side.

It would be humiliating and pitiable, after the magnificent lives that have been paid, after the hardships, the suffering and the sacrifice and the privations of millions to accomplish a worthy end, that end, in the long run, should be frittered simply because we haven't the common sense to take prosperity just as level-headedly and as calmly as we took privation.

France profited by the penalties exacted from her in the seventies. They, too, were intended as a punishment and deterrent. Because she was a different kind of vanquished the world is in accord in being pleased that they turned out a blessing instead.

But the German people deserve punishment, should receive it and feel it if they are not to be led amuck again in the future.

We've started out with a handicap. Unless we maintain it for generations Germany is not punished at all, but aided.

It is time we take count of things; time we work and reason, instead of merely frittering, as we have been doing.

## Overconfidence in the Man of Higher Education

A company manager some years ago was interviewing an applicant for a position as industrial gas engineer.

"You have had experience at this class of work?" he took it for granted.

"Eight years," returned the applicant.

"You have produced results?"

"Added twenty million cubic feet to the load in the last year, besides holding ninety-eight per cent of the industrial business we began the year with. I could have done better, but the policy of the company lately has been to hold down the sales."

"Good! Now, what compensation would you expect?"

"Twenty-four hundred a year to begin with."

The company manager's laugh was not affected. It was genuine. Something new had been "pulled" on him.

"Why, Blank," he exclaimed, "that is absurd!"

"Why?"

"Because I can get a man—not experienced, of course, but an engineer, and equipped for the work—for just half of that amount. Because you have experience I'd be willing to make it fifteen hundred; but twenty-four hundred! That is unthinkable."

"Where would you get this man?"

"Oh, I'd simply write the head of the engineering department over at ——— University and tell him what I want. There's a raft of young fellows just graduating who want to get started."

"Why pay the extra three hundred, then? The railroads are getting those fellows for nine hundred."

The company manager reflected for a moment, as if a new thought had been offered.

"That is true," he conceded haltingly. "But I do not really know how it is. I've never succeeded in attracting such men at less than a hundred a month. I guess they consider railroading offers better opportunities for the future than the gas companies."

This time the industrial man laughed.

"We're too far apart altogether to even offer a chance of our getting together," he declared, rising. "But here's luck to you and the hope you'll succeed in getting the industrial load you hope for. Good-by!"

Thus it goes.

The gas industry has to pay higher for its novices because such novices demand at least a premium for the present as an inducement to enter a calling in which they see no future and in which they expect to abide only until the opportunity comes to enter a field of greater promise.

Also the blind faith of men who, dazzled by a diploma, never having received one themselves and not knowing really what is behind it, entrust to a novice a task that will present difficulties even to a specialist.

There is, in general, a sad dearth of promising material on which to build for the future in the gas field.

Too largely only those left-overs who haven't succeeded in finding a place elsewhere come to us—as they think—temporarily.

It is not necessary that we offer fabulous salaries to beginners to attract the class of material we need to the gas field. The big lure would be to offer opportunities for the future and make that fact generally known.

It is a characteristic of the engineering graduate that he will work longer, harder, more faithfully, in more disagreeable and dangerous surroundings and at less pay than any day laborer—at the beginning. It is the future these men see. Some of them, many of them, never come near to the attainment of the futures they have pictured, nevertheless they plod on unceasingly and, outwardly at least, undiscouraged.

Such unintelligent gauging of his needs as exhibited by the company manager Blank talked to will not provide these opportunities in the gas field or any other field.

The complete assininity of expecting a college boy to come into an entirely unfamiliar field and sell men whose lives have been devoted to producing a manufactured article, a new fuel for doing their work—a sale that requires not only a knowledge of and experience with his fuel and the fuel being used, but also a knowledge of the process of manufacturing the article as well—is too obvious to warrant discussion.

And just so long as we continue to delude ourselves in the belief that an unfitted or low-grade man, as related to the task to be done, can satisfactorily perform a high-grade task we will continue to view the compensation demanded by the high-grade and fitted type of man we need as excessive and unthinkable.

We must provide opportunity for the future in the gas field if we want the next generation of gas men to be anything more than automatons.

Of course, the gas industry possibly will be able to hobble along even if conducted by such. It supplies a necessity. But it will not be much of a heritage to hand down to our successors. And he who builds but for the present isn't any builder at all.

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## Is One Heat Unit Worth as Much to the Consumer as Another?

(*Continued from page* 580.)

attempt to clearly or conclusively answer Mr. Ready's statement regarding the reduction of bills where natural gas has replaced artificial gas.

"But, if asked the reason why, which I believe is pertinent at this time, I would say that the reason gas of more than 550 B.t.u., or somewhere thereabouts, is

not as efficient as a lower value gas is because of the intermixture of concentrated heat units.

"When you raise a gas above 550, you must do so, in manufacturing gas from oil, by adding unstable hydrocarbons.

"In adding unstable hydrocarbons you add an element which is not consistent with the other constituents of your gas, and which is the gas Mr. Ready tells of.

"The bills of the average consumer where natural gas has replaced artificial gas, is for gas consumed on the top burners of the stove. I assume that is the greatest consumption of gas—the consumption on the top burners of the stove.

"The burning of gas in the top burner is almost entirely by secondary combustion. The small amount of primary air added in the present day appliances does not begin to produce the efficiencies obtainable by the Selas system or the other pre-mixture systems in industrial uses.

"But in the kitchen combustion is practically confined to a mixture with secondary air.

"The law of diffusion of gases is that gases will mix inversely as the square root of their specific gravity. When we take an average artificial gas and analyze it, we find it is composed very largely of hydrogen and carbon monoxide. The carbon monoxide and hydrogen require 2¼ parts of air to one part of gas for combustion, and they are going to combine or obtain the necessary air for combustion at a rate inversely proportionate to their weight. In this gas we also find benzine which requires approximately 38 parts of air to one part of gas and that again is going to combine with the necessary 38 parts of air inversely as its weight. So it must take something like fifteen times as much air to burn a unit amount of benzine in the gas as it does hydrogen or carbon monoxide, and while the benzine must get in the time employed fifteen times as much air, their difference in specific gravity makes the diffusion considerably slower. So it is almost a 100 to one shot that the benzine does not get the air required in the same time that the hydrogen does and a 25 to 1 shot on the carbon monoxide.

"Now, in trying at this time to give some reason why gases with benzine or unstable hydrocarbons do not produce the same relative efficiency as uniform gases of a lower heating value. I would state it as my opinion that it comes right back to the question of flame temperature. The reason why we do the work, the reason why we heat water, or the reason why we cook anything on top of a stove, if brought back to an ultimate analysis, may be defined as the transference of heat through matter.

"You have a utensil, which contains the useful work you want to perform. You are transferring heat from one side of the utensil to the other to do the work. The laws which govern the transference of heat from one side of the container to the other, are simply the outside temperature, less the inside temperature or the differential divided by the coefficient of the thermal conductivity of that utensil, whether aluminum, iron or copper or whatever it is composed of. So that with the utensil as a fixed unit, and the inside temperature the same, the ultimate work to be performed is the same, the efficiency of the gas can be brought down to one variable and that is the temperature you are able to produce on the outside of the surface of the utensil. Therefore, it becomes a question. The efficiency of gas is the temperature you can produce on one side of the utensil and therefore it is a question of flame temperature.

### No Relation Between Heat Value of Gas and Flame Temperature

"It has been definitely proven theoretically, that there is no direct relationship between the thermal value of the gas and its flame temperature. In fact, we may go so far as to say that it is almost inverse. But, to bring it right down to a practical point of view, when we burn natural gas, we are burning a gas composed almost entirely of methane. There may be some little ethane, but it is no near methane that we may call it all methane, and therefore every atom of that methane burning under a teakettle on the top burner of a cookstove is going about its own business and drawing its own requirement of air, and burning in a uniform short flame. If we take an artificial gas with a carbon monoxide and hydrogen in it and some methane in it and some benzine, while the hydrogen and the carbon monoxide are drawing their secondary air to produce combustion, it is nothing but a union of the oxygen with the hydrogen, the benzine must get 18 times as much air to create its reaction and perform its part of the same combustion. Do we get uniform combustion? I say no. We get two or three stages of combustion. If you look at the Bunsen flame, you can see two or three or a dozen stages of combustions. One cone gets a certain amount of air and the next cone gets air in turn and adds its mite to the combustion, but the time element is such that we have a series of cones or a series of flames which indicate the point at which that particular gas is getting the required amount of air for its chemical combination which we term combustion. If we adjust that appliance to any one of those cones, if it be the top cone, then we are wasting the maximum heat of the lower cone. If we adjust the appliance to get contact with the lower cones, the top cones are not permitted room for full combustion and we are wasting heat.

"It seems to me the reason why natural gas in many cases in the top burners of a stove may be more efficient for certain kinds of work, is because under certain conditions you can produce, or under the average conditions you may get a more uniform and more even flame of maximum flame temperature. That, however, does not apply to industrial uses. If you are permitted to add primary air to a point where secondary air is not needed, and to a point where it only needs ignition to make the combustion complete, the flame temperature theory is a fact. Mr. Pederson in his very interesting paper has told us that a large part of the top burner waste in cookstoves is going to be eliminated as appliances are developed. The discussion seems to have strayed from the point. It is not a question of the relative merit of natural or artificial gas, but the determination of a heating value standard that will permit the manufacturers of gas to utilize the raw materials at its command to produce the greatest number of serviceable heat units per dollar of investment or dollar of operating cost. Such a standard is certainly not one which requires the production and inclusion in our product of unstable hydrocarbons, but one which will permit their elimination."

# Featuring Preparedness

## Visualizing Comfort Has Proved a Successful Method of Advertising Gas Heaters and Ranges

By WILLIAM BLISS STODDARD

Owing to the coal strike the production of coal has been much curtailed, and no matter what the outcome is, the fact remains that with a long, cold winter on, there is bound to be a shortage of coal, and the gas men should get into print without delay and push the sale of gas appliances of all kinds, urging that the public in this way insure its customary amount of heat. That some concerns have been wide-awake enough already to see the advantage of this is shown in the recent ad of H. Batterman & Co., Brooklyn, N. Y., who advised through the columns of the press:

Don't let the threatened coal shortage catch you unprepared.
We suggest
GAS HEATERS AND RANGES
*Our Stocks Are Most Complete*
*Our Prices Moderate*
H. BATTERMAN & CO.

Another firm that called the attention of the public to "safety first" through the use of gas, was Woodward & Lothrop, Washington, D. C. They advertised against a furnace strike, but the ad would have been even more effective if they had warned against a coal strike:

WHEN THE FURNACE GOES ON A STRIKE

—as even the best of furnaces sometimes do on cold days—you may have need of a heater that will give instant service.

The celebrated Blank gas heater is scientific, clean, odorless; it is modeled after the Bunsen burner that mixes gas with air, for greater economy of fuel and quicker heating results, in the style suggesting an open fireplace.

Gas radiators, four to six column, decorative aluminum tops.

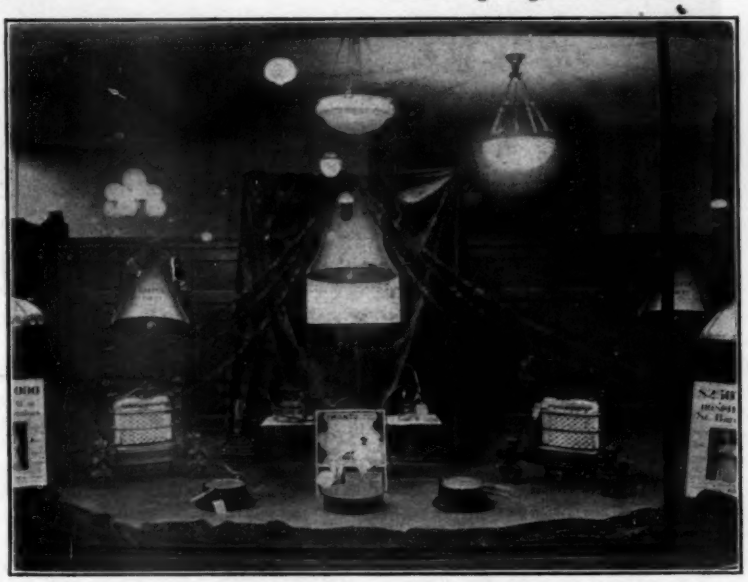
Gas cylindrical heaters, not ornamental but very effective.

An especially catchy way of bringing their gas stoves to the attention of householders was adopted by a dealer in gas appliances in Newark, N. J. When it was seen that the coal strike was inevitable they got out a circular letter, which was mailed sealed, under letter postage, to all of their patrons. This letter read:

"Dear Madam:—

"You have read in the papers the account of the great coal strike—and you know, no matter what the outcome, that coal is going to be scarce and high this winter. Are you stocked up for the season? If not you better prepare for heating your home this winter well in advance of actual need.

"You have used gas for cooking and for lighting, and know how simple, clean and economical it is. Now try it for heating—you will find that it gives equal or even better satisfaction.



CHRISTMAS WINDOW DISPLAY OF PUBLIC SERVICE GAS COMPANY IN NEWARK, N. J.

"Oh, the delicious comfort! Gas radiators and heaters! You go into a cold room, and instead of fussing around with wood and kindling and paper and matches, to say nothing of the grimy coal, all you do is to attach a tube to a gas jet, strike a match, and in an instant you have a radiant fire—while the room is warm in half the time it would take a fire or wood or coal to make an impression.

"Come in and see how simply they

are operated—how pleasant the warmth—and above all, learn how inexpensive the price.

"Yours for better service,
"HORSTMANN BROS."

Out on the Pacific Coast they are not so much troubled by the shortage of coal, but the enterprising gas men realize that they have a product that is superior to crude coal, and they are pushing their products night and day. The Pacific Gas & Electric Company, in Redwood City, Cal., recently had an ad that visualized solid comfort:

SOLID COMFORT!

A comfortable chair, slippers, smoking jacket and pipe awaiting.

Yet without warmth, the clean appealing warmth that gas heating means to a home—how bare and uninviting the scene would be.

Think it over. Decide now whether your heating is all that it might be. If it isn't—if there are cold corners in your home—if the furnace requires a lot of attention and the fuel makes a lot of labor and dirt—telephone us. We want to tell you about our

GAS HEATERS AND RADIATORS.

PACIFIC GAS & ELECTRIC COMPANY

Another crisp advertisement that started people to thinking was that run by the Tucson Gas Company, Tucson, Arizona:

MY NEW YEAR'S RESOLUTIONS:

I am resolved to live more comfortably—to save more money—to have more time for recreation during the coming year by installing in my kitchen a gas range, and purchasing a gas heater for emergencies to heat any room in the house.

GAS saves money in fuel; gas is sanitary; gas makes less work in cooking and heating—I WILL HAVE MY HOME PIPED FOR GAS AT ONCE.

WINDOW DISPLAY OF THE BALTIMORE GAS COMPANY OF BALTIMORE, MD.

This ad, much enlarged and surrounded with a border of red, white and blue was placed in their window, flanked by a gas range and several styles of gas heaters and radiators.

The Laib Company, Louisville, Ky., brought their gas heaters very much to the front during the first cold snap by the cheery and attractive window display. It was arranged to represent an old fashioned room, with rag rugs on the floor, an old style mahogany rocker, in which sat the wax model of a cheery little old lady, knitting. Her ball of yarn had fallen on the floor and was in the paws of a playful kitten, while an old cat on a hassock was enjoying the blaze of a cheerful heater in which the gas was burning brightly. A card suggested: "For Grandma's Room—During these cold winter days, try this little gas heater, different from all others. Consumes all the gas, wastes no fuel, gives more heat at less cost than any other twice its size." They backed up their window with an attractive car card, in bright colors, showing a similar room and captioned it: "Perfect comfort with a gas heater." Not content with this they placed an effective ad in the papers, inquiring:

IS THERE A GAS JET IN YOUR HOME?

On cold or chilly days attach a tube leading to a gas heater, and you will be surprised at the instant rise in the temperature. The initial expense is little.

TRY A
GAS RADIATOR
GAS CYLINDRICAL HEATER
OR A
GAS HEATER

which gives the happy suggestion of the old fashioned fireplace, but may be used in any room, or in any part of the room.

*See Our Gas Heater Window Display.*

Last, but not least, they had a special Monday sale of gas heaters, during which, on four successive Mondays, these stoves could be secured at a considerable reduction.

The Public Service Company, Newark, N. J., was another concern that called attention to the convenience of gas appliances—and although their display was of the Christmas variety, the same, with the Christmas bells changed to square cards would be appropriate for any month—especially during the present coal shortage. In the background was a dias draped with dark green velvet and on this was a platform on which were gas irons. Three large Christmas bells, of yellow cardboard had printed on them: "Useful Gifts." At either side of the dias were gas heaters, while down in front were gas chafing dish and waffle iron. Garlands of red and green crepe paper extended from the central bell to the corners of the room. A large card, hung on a steel standard in the center of the display advised:

GAS APPLIANCES AS GIFTS

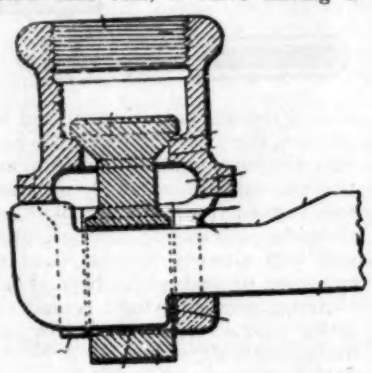
are sure to be appreciated, because their use means improved service and genuine economy in the home.

# PATENTS PERTINENT TO GAS INDUSTRY

## Cylinder Cock

Patent No. 1,323,076; described in Patent Office *Gazette*, Nov. 25, 1919, page 677. Lottie P. Ligon, Roanoke, Va. Filed Feb. 26, 1919. Serial No. 279,384. 1 Claim. (Cl. 121—134.)

A cylinder cock comprising a tubular body having a valve seat and slots below said seat, a valve having a

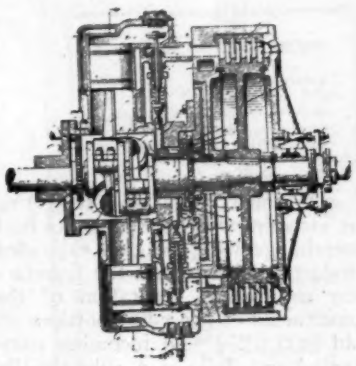


shank slidable in said body below the seat and having a valve head at its upper end seatable on said seat, said shank having a slot, and a slide extending through all said slots and having a recess in its upper edge with a cam at one end of the recess to lift the valve and an upstanding lug at the opposite end of the recess to move snugly under the upper end of the corresponding slot in the body, said slide having a depending portion below said recess to move into the slot of said shank close to the lower end thereof when said lug moves into the body for holding the valve head on the seat.

## Turbine Gas Engine

Patent No. 1,322,577; described in Patent Office *Gazette*, Nov. 25, 1919, page 584. William G. Johnston, Philadelphia, Pa., assignor, by mesne assignments, to Hallack A. Penrose, Quinby, Va. Filed April 16, 1917, Serial No. 162,266. Renewed March 27, 1919. Serial No. 285,634. 9 Claims. (Cl. 60—13.)

A turbine gas engine comprising a shaft having oppositely arranged crank pins and also having a spur gear, a compressor housing and a turbine housing fixed together and in which the shaft is rotably mounted; the compressor housing having a plurality of radially disposed cylinders and a chamber at the side of



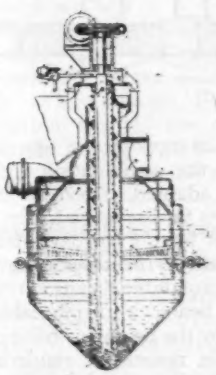
each cylinder adjacent to the turbine housing and inlet and exhaust ports in communication with said chamber and also having an annular fuel-supply passage in communication with the inlet ports of the chambers and passages connecting the exhaust ports of the chambers with the interior of the turbine housing, and the said turbine housing having an interior annular exhaust passage in its side remote from the compressor housing, a rotor fixed on the shaft and disposed in the turbine housing, pistons movable in the cylinders and arranged in groups; one piston in each group having a rod connected with one crank pin and the other pistons of said group having rods connected with the first-named rod, normally-closed radially-movable inlet and exhaust valves, plungers complementary to said valves, a common cam member for moving the plungers and valves outwardly and directly opening said valves; said cam member being of a sleeve form and surrounding and rotable about the shaft and having internal gear teeth, and idler gears mounted on the turbine housing and interposed between and intermeshed with the spur gear on the shaft and the internal gear teeth of the cam member.

In a device of the character stated, a shaft, internal combustion motors mounted about said shaft, intake and exhaust valves therefor, a rotor also mounted on said shaft, exhaust passages leading from ports controlled by said exhaust valves to said rotor, removable plugs mounted in the cylinders of said motors in proximity to said exhaust valves and having inwardly-extending plates projecting into the explosion chambers and serving as a vaporizer for effecting the heating and further expansion of the exploded gases prior to their impact on the blades of said rotor.

## Apparatus for Producing Ammonium Sulphate

Patent No. 1,233,758; described in Patent Office *Gazette*, Nov. 25, 1919, page 618. Henry A. Carpenter, Sewickley, Pa., assignor to Riter-Conley Manufacturing Company, Leetsvale, Pa., a Corporation of New Jersey. Original application filed Feb. 15, 1916, Serial No. 78,444. Divided and this application filed July 18, 1918. Serial No. 245,508. 22 Claims. (Cl. 23—21.)

In the production of sulphate of



ammonia, the method herein described, consisting in introducing coal gas into an acid saturation bath, and utilizing the heat of the gas which

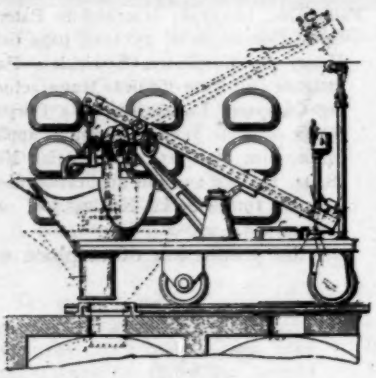
has been exposed to the bath for controlling the temperature of the admitted gas.

In apparatus for producing sulphate of ammonia, a saturater, a gas heater and a by-pass extending around the heater, the heater and by-pass adapted to receive coal gas from the same source and both adapted to discharge into the saturater, a valve for proportioning the flow of gas through the heater and by-pass, a motor for acuating the valve, and a thermostat exposed to the gas discharging from the saturater and operatively connected to the motor for controlling the operation thereof.

## Apparatus for Charging Gas Producers

Patent No 1,322,877; described in Patent Office *Gazette*, Nov. 25, 1919, page 640. Henry A. Carpenter and Arthur W. Warner, Sewickley, Pa., assignors to Riter-Conley Manufacturing Company, Pittsburgh, Pa., a Corporation of New Jersey. Filed July 13, 1915. Serial No. 39,710. 42 Claims. (Cl. 265—56.)

In a producer charger adapted to

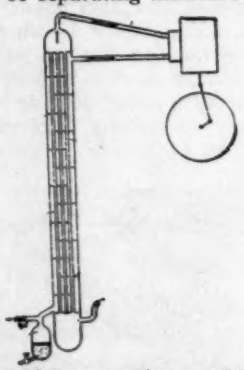


convey charges from one level to another, the combination with a receptacle adapted to receive and having means to discharge loads, a rocking beam having an extended range of movement for supporting the receptacle, rotatable means carrying the rocking beam, a displaceable poise carried by the beam for balancing the receptacle, means for rendering said poise effective as a balancing factor in moving the receptacle between levels, and means for rendering said poise ineffective as such factor during the loading and unloading operations.

## Apparatus for Removing Moisture from Gases

Patent No. 1,323,014; described in Patent Office *Gazette*, Nov. 25, 1919, page 666. Georges Claude, Paris, France, assignor to L'Air Liquide (Societe Anonyme pour L'Etude Et L'Exploitation Des Procedes Georges Claude), Paris, France. Filed May 5, 1914. Serial No. 836,500. 9 Claims. (Cl. 183—115.)

In the liquefaction of gases, the method of separating moisture from



a gas which comprises, subjecting the incoming compressed gas to heat interchange with the cold expanded product resulting from the liquefaction and partial separation of the constituents of preceding portions of said gas, while said incoming compressed gas follows a substantially unrestricted sinuous and upwardly directed path traversed by the path of said expanded product.

## Gas Burner Provided with Cross Gas Exit Slots

Patent No. 1,323,773; described in Patent Office *Gazette*, Dec. 2, 1919, page 103. Charles S. Kendrick and Arthur T. Curry, Dayton, Ohio. Filed March 16, 1918, Serial No. 222,822. Renewed April 23, 1919. Serial No. 292,244. 1 Claim. (Cl. 158—116.)

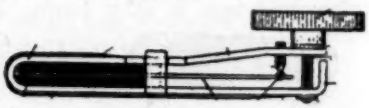
A burner of the type specified comprising a head having a series of screw-threaded apertures, the upper surface thereof being of rounded form and provided with cross gas exit slots, a feed pipe connected with

the lower-most one of said screw-threaded apertures, a series of radial burner arms connected with the other of said screw-threaded apertures, said burner arms having for a portion of their length a series of straight transverse gas exit slots and for another portion of their length a series of transverse outwardly tapering gas exit slots, and detachable caps inclosing the ends of said burner arms, said caps having outwardly tapering transverse gas slots therein, substantially as described.

## Thermostat with a Thermostatic Element and Insulation Clamped Together

Patent No. 1,323,203; described in Patent Office *Gazette;* Nov. 25, 1919, page 702. Even J. Rohne, Minneapolis, Minn. Filed Feb. 28, 1918. Serial No. 219,718. 5 Claims. (Cl. 200—31.)

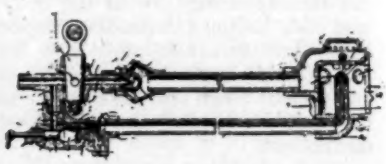
In a thermostat the combination,



with a thermostatic element and insulation, therefor, of a base plate having a tongue extending therefrom and covering said element, and insulation, ears formed from said base plate and clamping said tongue, said insulation and said element together, and an extension of said tongue beyond said clamping point carrying a contact coacting with a contact carried by said thermostatic element.

## Lighter for Gas Stoves and Simmering Burner Combined

Patent No. 1,322,349; described in Patent Office *Gazette*, Nov. 18, 1919. Henry Ruppel, Cleveland, Ohio, assignor to American Stove Company, St. Louis, Mo., a corporation of New Jersey. Filed Dec. 3, 1915. Serial No. 64,876. 17 Claims. (Cl. 158—115.)



A combined simmering burner and lighter for gas stoves, comprising a housing, a simmering burner formed in the upper end of the housing, a lighter arranged within the housing below the simmering burner, a pilot light within the housing above the lighter, and independent valves for controlling the supply of gas to the pilot light, the simmering burner and the lighter.

# NEWS OF THE GAS INDUSTRY

## Heating Municipal Building by Gas Saves City $5 Per Day

Use of artificial gas for heating has been found more economical than other fuel for heating one of the city public buildings in Minneapolis, Minn.

A Rector system has been installed in The Gateway, a large public rest house and assembly room kept open for twenty-four hours each day. The cost of heating the building by gas during cold weather amounts to about $7 a day, but the services of three men, each drawing $4 a day, formerly required to take care of the heating plant, have been dispensed with. As the janitor now cares for the heating plant, the saving is figured roughly at $5 a day, besides the former fuel cost.

## New Device Saves Every Part of Old Diaphragm Discs Including Solder

J. T. Lucas, superintendent of the meter repair department of the Minneapolis (Minn.) Gas & Light Company, has designed a new device which is now being used extensively in the company's meter repair shop.

The device is the result of wartime necessity. It is designed to save practically every part of old diaphragm discs, even to the solder.

Before the war new discs could be had for 4½ cents each, and, on account of the labor involved, when used were generally thrown away. During the war, however, the price of discs doubled, the guide eyes did likewise, while Government restrictions made solder extremely scarce.

Mr. Lucas' device, which is simple in construction and, excepting the small electric motor, is made of inexpensive materials in the meter shop itself, does the work in one general process and if operated continuously for an ordinary working day would mean a net saving to the company, it is estimated, of $70. Close to $19 worth of solder, it is claimed, is included in the day's savings.

By placing the old disc on a small circular holder the operator presses a pedal with his foot which automatically turns on the heat, melting the solder and whirling the disc in such a way that the guide eyes drop into a container, while an attachment rotates a small washer which cleans the eyes, all at one and the same time.

Several hundred discs are handled in the course of one day's operations, so that the machine is actually kept working only a few days out of each month.

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THE MASSACHUSETTS LIGHTING COMPANIES report net income, from the companies owned by them, after deduction of interest available for dividends, depreciation and reserve for the year ended Oct. 31 last, of $492,442, an increase of $117,514.

## Light Cut Saves 25 Tons Coal a Day

Elimination of display lights in the stores has saved 25 tons of coal daily, according to James R. Wood of the Urbana & Champaign Gas, Electric & Street Railway Company, of Champaign, Ill. The conservation enabled the company to maintain a supply of coal sufficient to last for several days additional.

Use Our Branch Stores
For our customers' convenience, we have thirteen fully equipped Branch Stores where gas bills may be paid, appliances purchased, or any other business with the company transacted. Save time and car fare by using our local stores, where all the courtesy and service of the company is at your command.
NORTH SIDE
3671 Lincoln Avenue
3643 Irving Park Blvd.
466 W. North Ave.
SOUTH SIDE
731 West Sixty-third St.
3478 Archer Ave.
103-5 East Thirty-fifth St.
9051 Commercial Ave.
11025 Michigan Ave.
WEST SIDE
3243 West Madison St.
1709 W. Roosevelt Road.
1641 Milwaukee Ave
3734 West Twenty-sixth St.
4033 West Madison St.
Telephone Wabash 6000
The Peoples Gas Light & Coke Co.
Michigan Avenue at Adams Street.
What do You want for a Christmas Present?

BOOKLET OF CHRISTMAS SUGGESTIONS SENT OUT BY THE CHICAGO COMPANY —FRONT AND BACK COVERS

## American Gas Company Advertises Gas Without Cost

As a means of attracting the public and consumers to investing in its 10-year 7 per cent coupon convertible gold bonds, the American Gas Company advertises in the news columns of Western papers as follows:

"GAS PRACTICALLY WITHOUT COST

"If your gas bill amounts to $2.33

per month or less, a small investment in American Gas Company's 10-year 7 per cent, Coupon, Convertible Gold Bonds will pay the bill for you, and in addition you are privileged to become one of its stockholders and share in the earnings of this thirty million dollar company. No better opportunity is offered for the small or large investor to-day than $700 on a $1,000 investment at maturity of these gold bonds paying interest semi-annually. Think it over and call at gas office for further information."

## Rome, Ga., Company May Be Forced to Close

F. J. Cahill, manager of the Rome (Ga.) Municipal Gas Company, has announced that unless the Rome Municipal Gas Company can make arrangements to purchase coal at a better price than it has been able to secure confiscated fuel the plant will discontinue operation.

Manager Cahill says that he is willing to pay the old Government price for coal, $5.20 per ton f. o. b. his plant, but that he has been required to pay $8.45 per ton for fuel confiscated and turned over to him by the Railroad Administration. He asserts that the company cannot stand this increase at its present scale of prices; that it cannot increase prices without the consent of the Railroad Commission, and that unless something can be done he sees no alternative but to go out of business until the coal strike is settled. The company has on hand about 200 tons of a low-grade coal, purchased during the war, but this will not make a quality of gas good enough to cook with and is practically useless, Mr. Cahill says.

## Progress in Use of Gasoline Substitutes Reported by Experts

Progress in use of kerosene, crude oil and other substitutes for gasoline was reported at the annual meeting of the American Society of Mechanical Engineers.

A kerosene motor would be successful, in the opinion of Lawrence F. Seaton, of Lincoln, Neb., if designed so that the piston displacement were larger than commonly used, if the intake passages were larger and shorter, and if the incoming gas were heated to a temperature considerably higher than the boiling point of kerosene.

## Milwaukee Resumes Fight for 70 Cent Gas

Seventy-cent gas for small consumers of the city of Milwaukee will be the object of the city in its action filed with the Wisconsin Railroad Commission more than three years ago, which the commission, in a communication to City Attorney Clifton Williams, has signified its willingness to try at an early date. The present gas rate is 85 cents, with 10 per cent discount if paid before a certain date, making the rate 76½ cents for 1,000 cu. ft.

## Serious Gas Shortage in Southern California Instigates Investigation

In order to encourage development and to arrange an equitable distribution of the available gas supply the California State Railroad Commission has opened a hearing in Los Angeles into the entire gas conditions. President E. O. Edgerton, of the Railroad Commission, sat alone at the first hearing, which concerns the Los Angeles Gas & Electric Corporation, Southern California Gas Company, Southern Counties Gas Company and the Midway Gas Company.

At the very outset of the hearing President Edgerton made the following statement to the room full of representatives of the city, the gas companies and the city attorneys of various sister cities:

"The Railroad Commission has initiated this proceeding for the purpose of investigating every phase and angle of gas service in southern California.

"It has been brought to our attention that a serious gas shortage has occurred during the last few months. There are disputes and disagreements between gas companies as to the proper amount of gas to be delivered, one to the other, and between industrial consumers and the various gas companies as to the right of these consumers to a continued supply of gas, and within the last few days between domestic consumers and the companies as to adequate and continued gas supply.

"It appeared to the commission that the gas service to the whole of Southern California was so interconnected and interdependent that in order to approach the matter intelligently and adequately it was necessary to consider gas service both inside and outside of the various municipalities.

"The purpose of the commission in this proceeding, among others, will be to bring about an equitable distribution of available gas and to encourage the development and distribution of more gas in order that this southern community may be adequately supplied with this service, which is constantly growing in importance to both domestic consumers and industry."

## American Gas Note Issue

The American Gas & Electric Company has sold to William A. Read & Co., of New York, $4,000,000 of one, two and five-year 6 per cent secured notes. These notes were issued in part to refund $2,500,000 notes maturing Jan. 1, 1920, and are the direct obligation of the American Gas & Electric Co. secured by deposit of $6,667,000 first and refunding mortgage 5 per cent bonds, due 1947, of the Ohio Power Company, which owns and operates the electric light and power properties in Ohio of the American Gas & Electric Company. The net income of the American Gas & Electric Company for the twelve months ending Oct. 31, 1919, was more than three times interest charges. The common stock of this company sells at about $125, which is 250 per cent of par. The earnings of the Ohio Power Company for twelve months to Oct. 31, 1919, were more than two and a half times the interest charges on all first and refunding bonds outstanding, of which $6,667,000 deposited as security for these notes are pledged at 60 per cent. The unsold balance of these notes are being offered at 99.05 and interest for the one year maturity and 98 and interest for the two-year maturity.

## Logan Company Agrees with 2 Towns Not to Withdraw Service

The town councils of Athens and Chauncey, Athens County, Ohio, have agreed to a minimum gas rate of 45 cents with a maximum of 60 cents a 1,000 ft. for consumers who use over 15,000 ft.

The fifty-six other towns in Ohio served by the Logan Gas Company have been asked to pay the same new high rate. The Logan Company has agreed to dismiss its application to withdraw service from Athens and Chauncey, Ohio.

## Dupont Company Launching Industrial Service Corporation

In order to supply the Petersburg-Hopewell section of Virginia with electricity, water, gas and steam in such quantities and by methods in keeping with the industrial growth now setting in this section of the State, a new million-dollar concern has just been chartered under the name of the Industrial Service Corporation of Virginia. The firm is in the hands of local capitalists and the Du Pont Chemical Company. The main officers of the firm will be located here, and will furnish power, water and gas to manufacturers locating in this section. Officials directly in charge of the new project are from Wilmington and New York.

The new company will supply power, water and gas over a radius of fifty miles about the plants located in and near Hopewell. It is estimated that about 30,000 cu. ft. of gas per day will be at the disposal of consumers when the plant is in full operation. Several hundred miles of pipe lines and cables will be required to carry the gas and current from the plants and other stations.

Work on the plants will be started as soon as necessary materials can be secured and transported to this section. Units of the plant will be put into operation as soon as the construction work can be carried out, and later, as the demand increases, it is planned to enlarge the works.

## Plumbers to Lay Gas Lines Missouri Commission Rules

In the future plumbing firms in the State of Missouri will lay all pipes from the curb line to the meters connected, the jobs when completed to be inspected by the Joplin Gas Company in conjunction with officials from the city offices.

This decision was reached at the conclusion of a two hours' conference under the chairmanship of David E. Blair, member of the Missouri Public Service Commission.

The conference, attended by Ray Bond, representing the city of Joplin; Chauncey W. Smith, superintendent of the Joplin Gas Company; A. H. Monteith, city building and plumbing inspector, and a number of plumbers, was called to straighten out an entanglement which had been the cause of much worriment to all parties concerned for some years, and it was to arrive at a conclusion to those vitally interested that the aid of the State commission was asked in order that a ruling might be handed down.

Previous to the ruling the Joplin Gas Company had installed the pipes, charging actual cost to the consumer of the gas so connected.

The Radianfire
"I am going to give that to my wife for Christmas," said a man who saw the "Radianfire" in operation for the first time. His choice will please his wife and give joy to the whole family for years to come. Everybody who sees the "Radianfire" wants one. Monthly installments? Certainly. Your credit is good with the gas company.
Washing Machine
"Thor" or "Easy"—Gas-heated, electrically operated. Every woman has a right to this up-to-date domestic help. Get one for wife or mother—on monthly installments.
Gas Space Heaters
Many styles and sizes. Warm up that cold room, or add that little extra heat you need so badly when the zero weather comes.
New Gas Ranges
Handsome white enamel trim, automatic top lighters, all modern improvements. All gas ranges sold by the gas company are carefully tested and the company's guarantee is backed by the company's service.
Floor Lamps
Attractive designs and artistic shades. Look them over before buying floor lamps elsewhere.
Self-Heated Irons
Inexpensive, packed in a neat box, an inestimable boon to the woman who has to do the family ironing.
Radio-Amber Glow Lights
Mantle, chimney, globe, burner, complete. A soft, steady, satisfactory light, to read or work by.
Art-Glass Domes
Handsome and original designs in art glass for dining room, library, halls, etc. Examine, and compare prices.
Automatic Water Heaters
Hot water when you need it. Opening the faucet turns on the gas and the water is heated "on the run." Turning off the water shuts off the gas.
Exhibition Hall and Rest Room
When at the company's main office, Michigan Avenue at Adams Street, do not fail to take advantage of the convenience and comfort of our customers' "REST ROOM."—Facilities for writing, resting, checking shopping lists, or telephoning.

INSIDE PAGE OF THE CHICAGO COMPANY'S CHRISTMAS SUGGESTION BOOKLET

## Memphis Company Will Make New Petition

The Memphis Gas & Electric Company, of Memphis, Tenn., is to file another application for emergency relief in the form of increase in gas rates in the city of Memphis, according to a decision handed down by the Tennessee Railroad and Public Utilities Commission, after a hearing on the petition for rehearing of the case, filed by the company.

The case will be heard again Jan. 2, according to the opinion of the commission made after dismissing the petition to rehear the case.

The commission's opinion follows:

"The commission has decided to dismiss the petition for rehearing, but to allow the company to file a new application for emergency relief, and states that the evidence taken in the former case will be looked to in the hearing of the new application.

"The additional evidence which the company has offered in the petition for a rehearing, it can offer in the new application. The city of Memphis is familiar with the record and if it has not been furnished, the company will furnish the city a copy of all the new evidence so that the city attorney can come here on the second of January. At that time the commission will hear the evidence offered by the company and hear the evidence of Mr. Livingston in support of the city petition.

"The commission takes the view that if the company is entitled to emergency relief it should have it as soon as possible, so instead of opening the old case, it will start a new case."

## Largest Gas Well in World Brought In

What is believed to be the largest gas well in the world has been brought in north of the Canadian River in Potter County, about 25 miles north of the city of Amarillo, Texas. The expert test reports a pressure of 71,000,000 cu. ft. per day, uncapped, and something over 100,000,000 cu. ft. capped.

## New Gas Field Found

The first oil test in the section around and about Ghent, Ky., resulted in a heavy flow of gas at a depth of 430 ft., tapping a reservoir that it was not known existed.

## Massachusetts Commission Allows Partial Increase

The Massachusetts Board of Gas and Electric Light Commissioners, which will go out of office as soon as the members of the recently created board of public utilities are qualified, granted the East Boston, the Newton and the Watertown, Mass., gas companies permission to increase their rates from $1 per 1,000 cu. ft. to $1.05. Each company asked to increase its rate to $1.10, and officials expressed themselves as dissatisfied and will accept the rulings of the commission under protest, seeking later to bring legal proceedings to nullify the decision.

The commission announced that the 5 cents increase in each case was allowed because of higher wages and taxes.

## Iroquois Company Seeks Approval of New Franchises

The Iroquois Natural Gas Company, of Buffalo, N. Y., has applied to the Public Service Commission, Second District, for approval of franchises granted by the towns of Marilla, Erie County, and Bennington, Wyoming County, under which the company proposes to supply natural gas.

The franchises provide that within one year the company shall supply gas to houses on the principal streets in Marilla Village and on principal streets in Cowlesville at 85 cents per 1,000 cu. ft., with a discount of 10 cents a thousand providing 85 per cent of the families in each hamlet agree to take the service, as long as the company is able to get gas from its wells in Bennington Township, where it has developed several producing wells.

## Arkansas Company Increases Capital

Stockholders of the Arkansas Natural Gas Company have voted to increase the capital stock from $10,000,000 to $50,000,000. It was also voted to reduce the par value of the shares from $100 to $10, and to give each stockholder ten shares of new par value stock in exchange for each $100 par share. The directors will issue not to exceed $1,000,000 in common stock to be offered to stockholders at par.

## Big Gasser Indicates Large New Texas Field

The location of a great gas field in Stephens County is indicated, in the opinion of oil men, by the bringing of a gasser flowing from 50,000,000 to 60,000,000 cu. ft. of gas per day, three miles south of Breckenridge by the Walker-Caldwell Company. News of the bringing in the well has been received in Dallas by R. B. Sticher, secretary-treasurer of the company.

The possible new field is about 125 miles from Dallas, Texas. The Walker-Caldwell Company has entered into negotiations with the Lone Star Gas Company to purchase the gas from the well.

Pipe lines to supply drillers in the Breckenridge field with gas for rigs and other uses will be built by the Walker-Caldwell Company. The company also is planning to build a casinghead gasoline plant at the well at once. Last reports from the well, known as Jones No. 2, were that it was spraying a considerable amount of oil. This is taken to indicate that the well ultimately will become an oil producer. The gasser is located on a 320-acre tract held by the Walker-Caldwell Company. The gas was struck at 3,100 ft. Jones No. 1 is a small producing oil well. Oil men state that big gassers usually turn into oil producers, the quality of the gas gradually increasing as the well blows.

Breck Walker, president of the Walker-Caldwell Company, which brought in the tremendous gasser, has had a picturesque history. Fifteen years ago he was a stage coach driver. He got into the banking business and about eight years ago staked his future on the oil game by buying up leases in Stephens County when gas was found in a well drilled for water. His income now is estimated at fully $100,000 a day. Clinton Caldwell is the other big holder in the company.

## Petitions $40,000 Bond Issue

The Martinsville (Ind.) Gas & Electric Company petitioned the Indiana Public Service Commission for authority to issue $40,000 debenture notes to sell at not less than 95 per cent of par and to bear interest at the rate of 7 per cent. The issue is desired to take care of debts that are now carried by temporary loans.

## Immense Gas Well Discovered in California

An immense gas well, said to be the largest in the State of California has been brought in by the Natural Gas & Petroleum Company, which has been prospecting twelve miles south of Corcoran and six miles west of Angiola, Cal. The well has been cemented to prevent a blowout. The company, which is composed of San Francisco, Oakland, Sacramento and Lindsay men, propose to pipe the gas all over the San Joaquin Valley of California, and if found in sufficient quantity will also pipe it to the San Francisco bay cities. Six carloads of machinery are now on the ground to put down a third well. This well is the second well brought in in this district, the first one having sanded. The men connected with the company are the following: R. V. Dixon, Axel Johnson, A. W. Elliott, W. F. Kendall, W. A. Bohland, Fred P. Kendall, George Johnson and R. F. Schmerser.

## New Wells in Callahan County, Texas

A good showing of gas and oil has been found in the Clyde-Callahan test two miles north of the town of Clyde, in Callahan County, Texas. The find was made between 400 and 500 ft., and is said to be causing much excitement in that section.

There is much interest here in the Grant well of the Ohio Cities Company, ten miles southeast of Baird, which is reported making 40,000,000 ft. of gas daily. The derrick was burned down on Thanksgiving Day, and at last reports the blaze was still raging. The drillers had been cleaning out and underreaming at 785 ft., to enter the 800-ft. sand, when the fire was started by the striking of a match. The well had been making strong gas from the 600-ft. sand.

This well is over thirty miles west of the Ranger-Eastland field of Texas, and approximately 25 miles southeast of Abilene.

## Fifty-First Gasser in Elk City Field

With a production of 70,000,000 cu. ft. of gas daily, the Southwestern Gas Company has completed the No. 6 well in the Elk City field. The pressure wrecked the derrick floor and blew the tools 200 ft. above the top of the hole. It is the fifty-first gas well in the field.

## "The United States vs. Ten Thousand Tons of Coke"

Ten thousand tons of coke said to belong to the Spokane Falls (Wash.) Gas Light Company, and alleged to be held by agreement with the Hawkeye Fuel Company of Spokane, Wash., for unlawful profits, was seized under libel proceedings instituted in the court of United States District Judge Rudkin by United States District Attorney F. A. Garrecht.

The libel complaint, which is entitled, "The United States vs. Ten Thousand Tons of Coke," charges that the coke is "illegally held in violation of the act of Congress approved Aug. 10, 1917, and is liable to condemnation and subject to confiscation" for the reason that the Spokane Falls Gas Light Company is holding it for the purpose of unreasonably increasing the price.

Disclosures said to have been made to the Federal grand jury now investigating the high cost of living in the eastern part of the State of Washington, brought about the libel suit, according to District Attorney Garrecht. Mr. Garrecht stated that the coke was being sold at from $9.25 to $9.75 a ton, an increase of $1.25 a ton over the summer schedule of prices.

## Omaha Company's Office Manager Becomes Vice-President of Auditing Concern

Alban M. Sommar, office manager of the Omaha (Neb.) Gas Company, has tendered his resignation and on Dec. 1 became vice-president and chief accountant of the Dworak Auditing Company.

Mr. Sommar has been manager of the Omaha Gas Company for the past four years, coming to Omaha from Savannah, Ga., where he occupied the position of chief clerk of the gas company in that city.

## New Gas Producer

Owing to the high price and scarcity of steel during the war, a gas company in Syracuse found it necessary to build the shells of a 200-h.p. gas producer and scrubber out of concrete staves. The shells are 8 ft. in diameter and the staves measure 20 by 10 by 2½ in. They are connected by tongue and groove joints. Between the concrete and the fire brick lining there is a 3-in. space filled with a heat resisting material.

## J. C. York Becomes Secretary of Bristol Company

J. C. York, formerly a member of the American Expeditionary Forces, who has been connected with the Doherty interests for the past six years, has accepted the position of secretary of the Bristol (Va.) Gas & Electric Company, which was left vacant by M. F. Steelman. Mr. York has been connected with the Doherty company since 1912, with the exception of about two years which were spent in the Army.

He was secretary of the Salina Light & Power Company, another of the Doherty interests, at Salina, Kan., for a period covering about three years. He resigned this position to enter the service, and remained in the Army until the cessation of hostilities and the demobilization of the bulk of the Army. When he returned he re-entered the service of the Doherty interests and was assigned to Hutcheson, Kan., as auditor. He came from that place to Bristol, Va.

Mr. York has already assumed his duties in Bristol, Va.

## D. M. McCallister Stoking Fires of His Plant

After demanding an increase to $5 for an eight-hour day, stokers at the Sturgis (Mich.) Gas Company's plant went out on strike. The management refused their demand. In order to keep the plant in operation D. M. McCallister, manager; Frank Davis, foreman, and Raymond Hoffmann, collector, have been feeding the fires in the absence of the strikers.

## American Gas Company Stock Cannot Be Bought in in the Open Market

East St. Louis banks have bought over $35,000 worth of the American Gas Company's new offering of 10-year 7 per cent gold bonds, which may be converted into capital stock of the company. This stock cannot be bought in the open market. The company has shown big growth in the past ten years. Just previous to the war the stock was quoted at 124.

In 1907 gross earnings were $1,168,378, while in 1917 they reached the enormous sum of $5,287,706, five times as much as in 1907.

## California Industries Making Fight for More Gas—Additional Mains and Holders Needed

Whether the use of gas for domestic purposes is of paramount importance to the exclusion of gas for industrial concerns has come in before the California State Railroad Commission at a hearing in Los Angeles as the result of the shortage of gas in San Pedro and other southern California towns.

Some of the industrial concerns object to being the first to feel the gas shortage. Under the low rate contracts they have, the gas company has the right to exercise an option to cut them off in case of a shortage that affects a domestic consumer.

Recently the shortage was so acute that both domestic consumers and industries were unable to secure gas during the middle of the day. The shipyards and other industrial consumers were able to get gas, but they were cut off also.

While a shortage in production of gas is claimed, it is generally believed that the shortage is due to lack of facilities on the part of the distributing companies due to failure during the war to keep up with the natural growth of the communities they serve. The reason given by the companies is that scarcity of material has made it impossible to build gas holders and lay mains large enough to carry the supply needed.

Every effort was made at the hearing to show the commission that domestic consumers should be served first, and that the gas companies should be required to provide facilities for taking care of industries as well.

## Larger Holder and High Pressure Mains Recommended for Central Illinois Company

The service engineer of the Illinois Public Utilities Commission has recommended the installation of gas mains of high pressure equipped with district pressure governors at load centers in the city of Peoria, Ill., by the Central Illinois Light Company. This company has been receiving pressure complaints recently, which trouble was caused chiefly by the presence of excessive quantities of naphthalene in the pipes.

The removal of this naphthalene from the pipes by blowing out the pipes or using gasoline as a solvent resulted in temporary relief for a few days, but the trouble recurred. The company has ten wagons and twenty-five men fighting to clear the mains of naphthalene.

In the report covering the detailed investigation made by the commission's service engineer after five days spent at the plant, the main office and on mains in various sections of the city, the company is commended for the efforts made, but he suggests that the trouble be fought at the source. Formation of naphthalene in gas is caused by too high heats, or heats unsuited for carbonizing the grade of coal in use. His recommendation for elimination of the formation of naphthalene at the plant and removal before entering the mains, and as the only means of a permanent removal of the troubles now causing complaint, is the installation of high-pressure mains and a larger holder.

### Where Gas Is Cheap

Gas manufactured by the municipality of Midnes, Eng., sells, in quantities of less than three million cu. ft. per annum at 24 cents net per 1,000. To consumers of over three million cu. ft. 20 cents net, and for motive power, 16 cents net.

## Construction Notes

### Industry Again Securing Money for Construction — Stacey Company Erecting Nine Holders

That gas companies are again able to secure finances to proceed with construction work is proved by the number of contracts for the erection of gas holders which the Stacey Manufacturing Company, of Cincinnati, Ohio, has closed in the last six weeks. This company is erecting eight gas holders in the West and one in Texas. They are as follows:

Two 500,000 cu. ft. gas holders for erection at Denver, Col., for the Denver Gas & Electric Company.

One 300,000 cu. ft. gas holder for erection at Port Arthur, Tex., for the Gulf Refining Company.

One 200,000 cu. ft. gas holder for erection at Cleveland, Ohio, for the Standard Oil Company.

One 100,000 cu. ft. gas holder for erection at Ludington, Mich., for the Ludington Gas Company.

One 100,000 cu. ft. gas holder for the American Public Utilities Company's plant at Chippewa Falls, Wis.

One 20,000 cu. ft. gas holder for the American Public Utilities Company's plant at Fond du Lac, Wis.

One 15,000 cu. ft. gas holder for the St. Louis Coke & Chemical Company's plant at Granite City, Ill.

### U. G. I. Installing Blue Gas Apparatus at McKeesport

The National Tube Company has awarded a contract to the U. G. I. Contracting Company of Philadelphia for the installation of blue gas apparatus at its McKeesport, Pa., plant.

### $300,000 New Plant Ready January 15

On or about Jan. 15 the Gary (Ind.) Heat, Light & Water Company will put into active operation its new gas plant which has been in course of construction for the past year and which will cost in the neighborhood of $300,000.

The new and enlarged plant will be sufficient to supply a city of half a million population, and will have eight times the capacity of the original plant installed twelve years ago.

The new gasholder will have a capacity of 2,000,000 cu. ft. of gas. The old gasholder contains but 250,000 cu. ft.

In addition to the big gasholder the company is installing new boilers, new purifiers and new boosters, the additions making practically a new plant.

The giant gasholder is 144 ft. in diameter and 180 ft. in height. When full of gas it will tower above every other structure in the city.

Construction was started about a year ago and it was the intention to have the new plant in operation some time during the summer or fall, but the difficulties encountered in securing material caused a delay of several months.

Vice-President Leonard Fitzgerald says the new plant will be in operation by the middle of January, 1920.

There is only one other gasholder in the State larger than the one which is being completed here, and that is in Indianapolis.

### New Gas Company Will Have Its Plant Operating by Spring

The Industrial Service Corporation of Virginia, a company which has recently been chartered with a capital of $1,000,000, is to establish one of the largest industries in the State, which will supply the Petersburg-Hopewell section with gas, electricity, water and steam. The plants of the corporation will be located in the vicinity of Hopewell, Va. The products of the company will also be available for Petersburg, Va., and its immediate vicinity. It is expected to have the plant in operation within a few months.

### Gary Gas Plant Constructing $300,000 Addition

Gary, Ind., leads all the cities in that State in construction in the last eleven months. During this period, 1,144 permits have been issued for a total construction expenditure of $5,263,142.

These figures do not include the expenditure of approximately $10,000,000 for the new Gary tin mills, nor for the construction of the addition to the gas plant of the Gary Heat, Light & Water Company, costing $300,000.

The building and industrial construction activities total approximately $15,500,000 for the eleven months.

### Pittsburg Company Erecting $125,000 Plant at McKeesport

The Peoples Gas Company has purchased 15 acres of ground in McKeesport at Milo Run Road. A power plant will be built to pump gas from the mains to a gasoline manufacturing plant to be located on the same property. The purchase price was $10,000 and $125,000 is the estimated cost of the power plant. The company will also build houses for employees to be engaged in and around the plant. Actual work will be commenced, and it is expected to have the plants in operation within sixty days.